SRT411assignment0

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3.1 ToDo:

Compute the difference between 2014 and the year you started at this university and divide this by the difference between 2014 and the year you were born. Multiply this with 100 to get the percentage of your life you have spent at this university. Use brackets if you need them

```
(2017-2014)/(2014-1985)*100
```

```
## [1] 10.34483
```

3.2 TODO

Repeat the previous ToDo, but with several steps in between. You can give the variables any name you want, but the name has to start with a letter.

```
Cur_Year = 2017
My_Birth = 1985
(Cur_Year - 2014)/(2014 - My_Birth)*100
```

```
## [1] 10.34483
```

3.4 TODO

Compute the sum of 4, 5, 8 and 11 by first com-bining them into a vector and then using the function sum

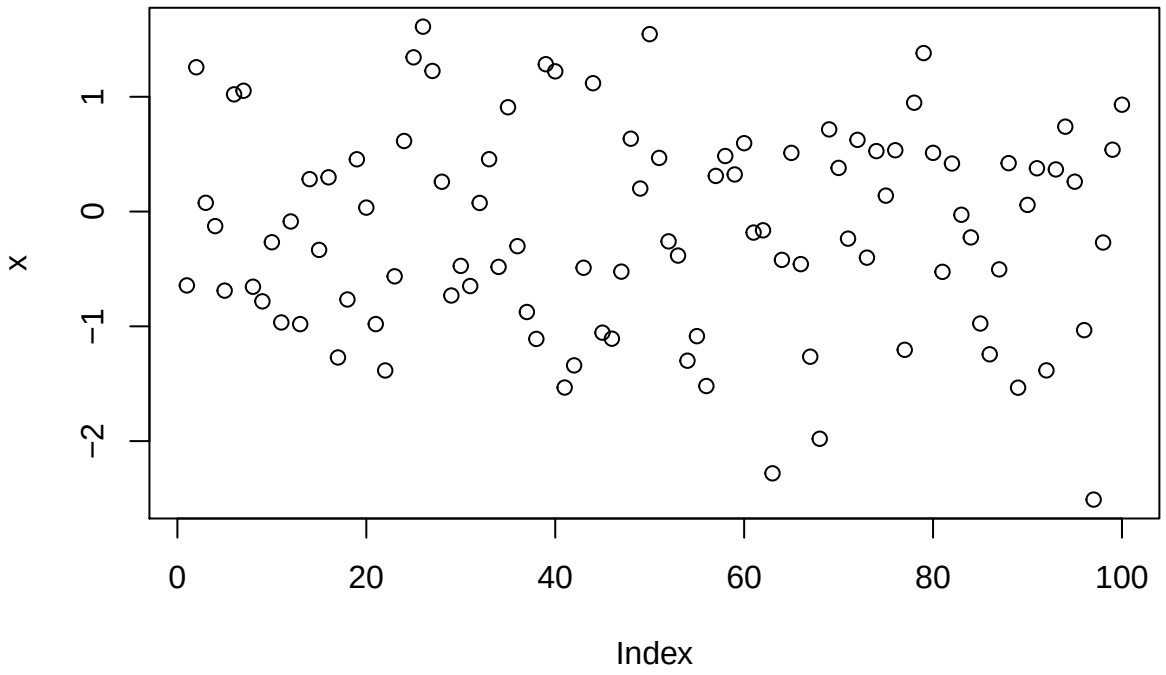
```
a=c(4,5,8,11)
sum(x=a)
```

```
## [1] 28
```

3.5 TODO

Plot 100 normal random numbers.

```
x = rnorm(100)
plot(x)
```



#4.0

TODO Find help for the sqrt function.

```
help(sqrt)
```

6.0 TODO

Put the numbers 31 to 60 in a vector named P and in a matrix with 6 rows and 5 columns named Q. Tip: use the function seq. Look at the different ways scalars, vectors and matrices are denoted in the workspace window.

```
P = seq(31,60)
Q = matrix(data=P, ncol=5,nrow=6)
P
```

```
##  [1] 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53
## [24] 54 55 56 57 58 59 60
```

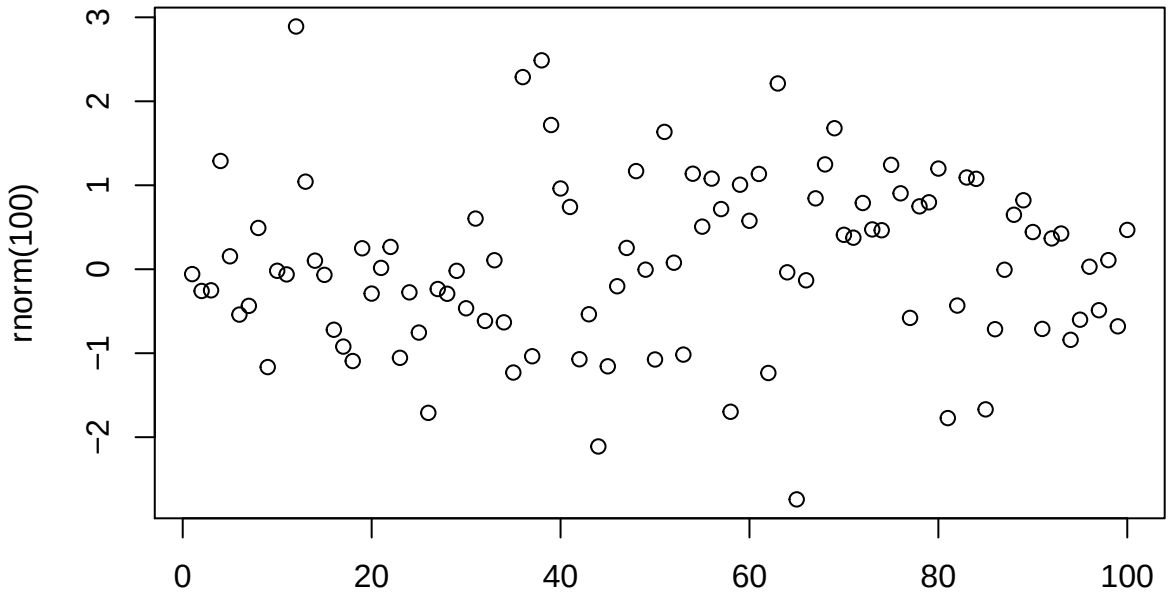
```
Q
```

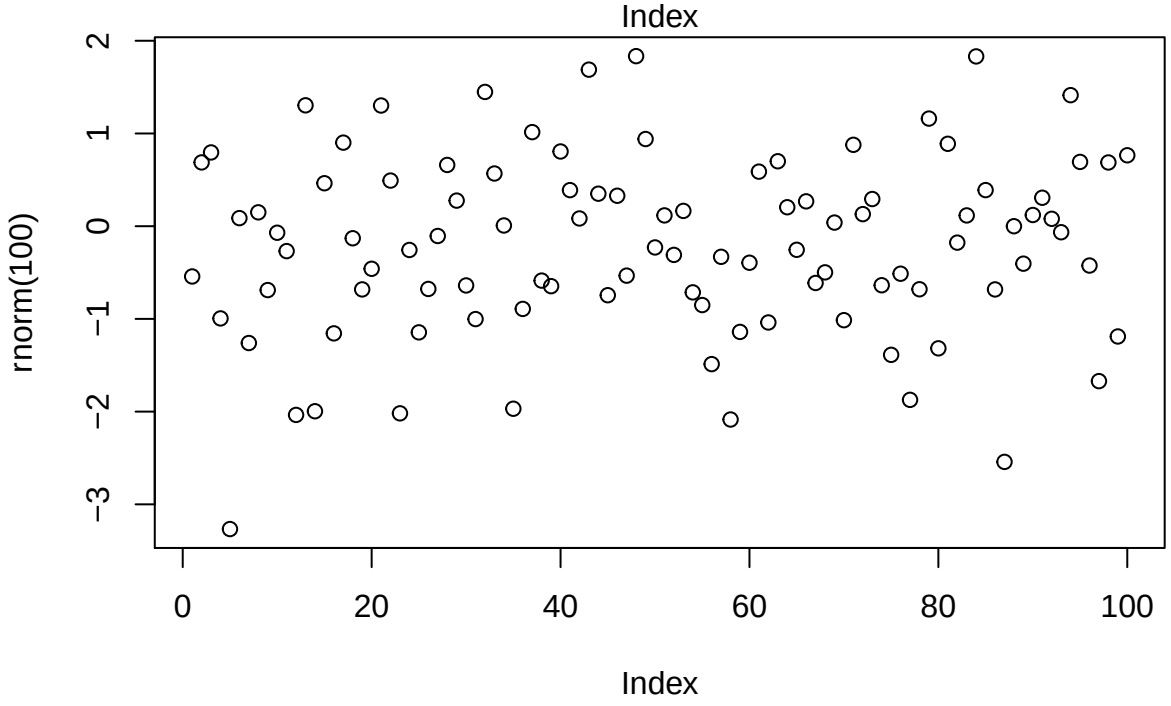
```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]   31   37   43   49   55
## [2,]   32   38   44   50   56
## [3,]   33   39   45   51   57
## [4,]   34   40   46   52   58
## [5,]   35   41   47   53   59
## [6,]   36   42   48   54   60
```

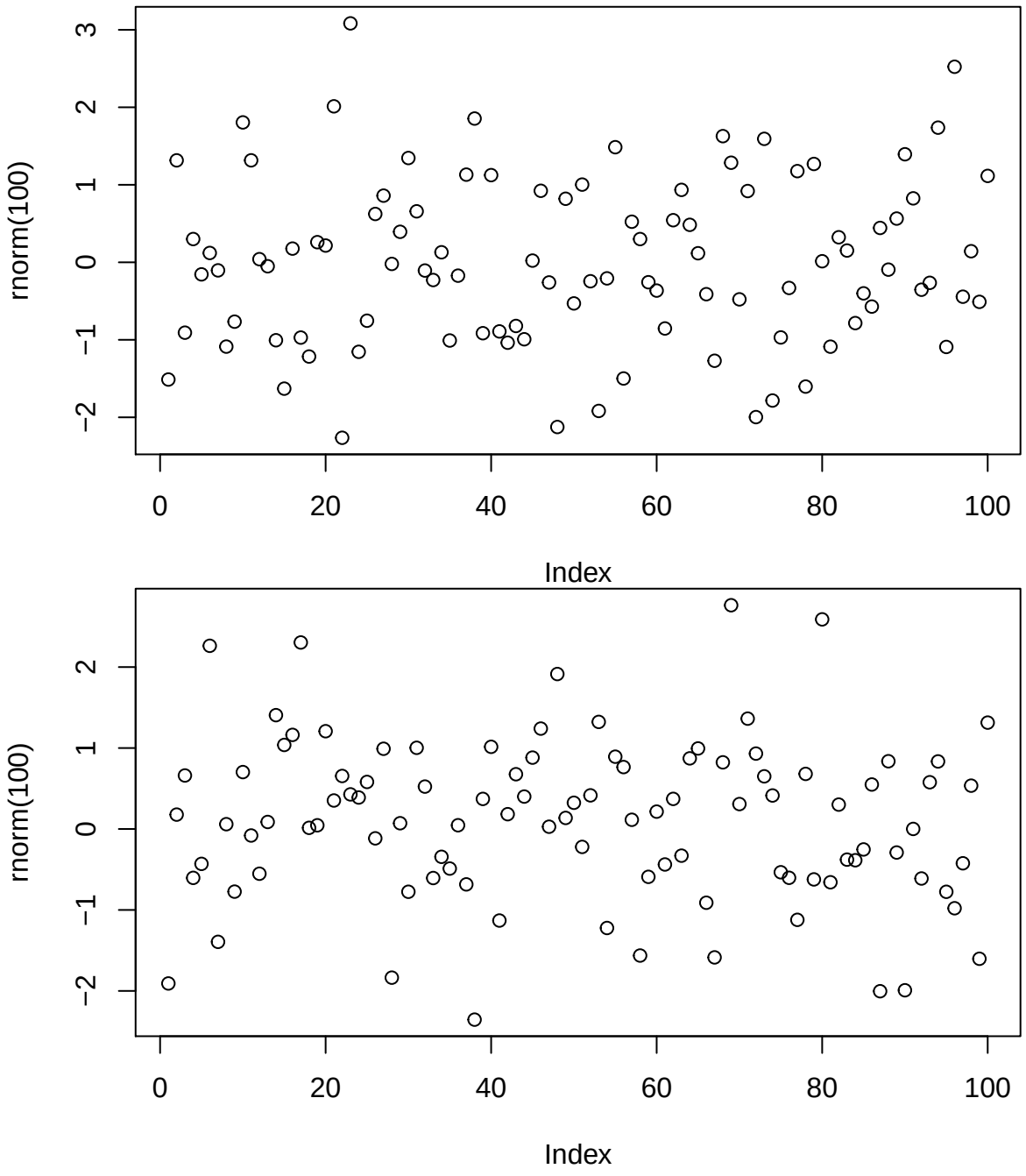
5.0 TODO

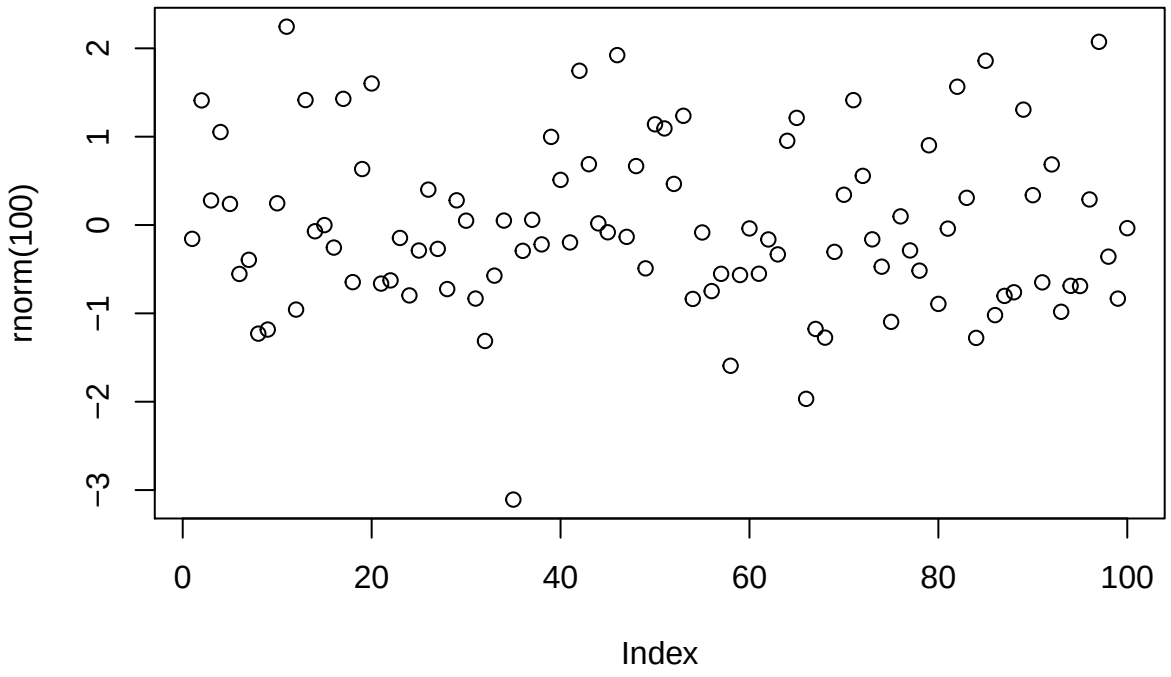
Make a file called firstscript.R containing R- code that generates 100 random numbers and plots them, and run this script several times.

```
earrings = 1
while (earrings < 6) {
  plot(rnorm(100))
  earrings = earrings+1
}
```





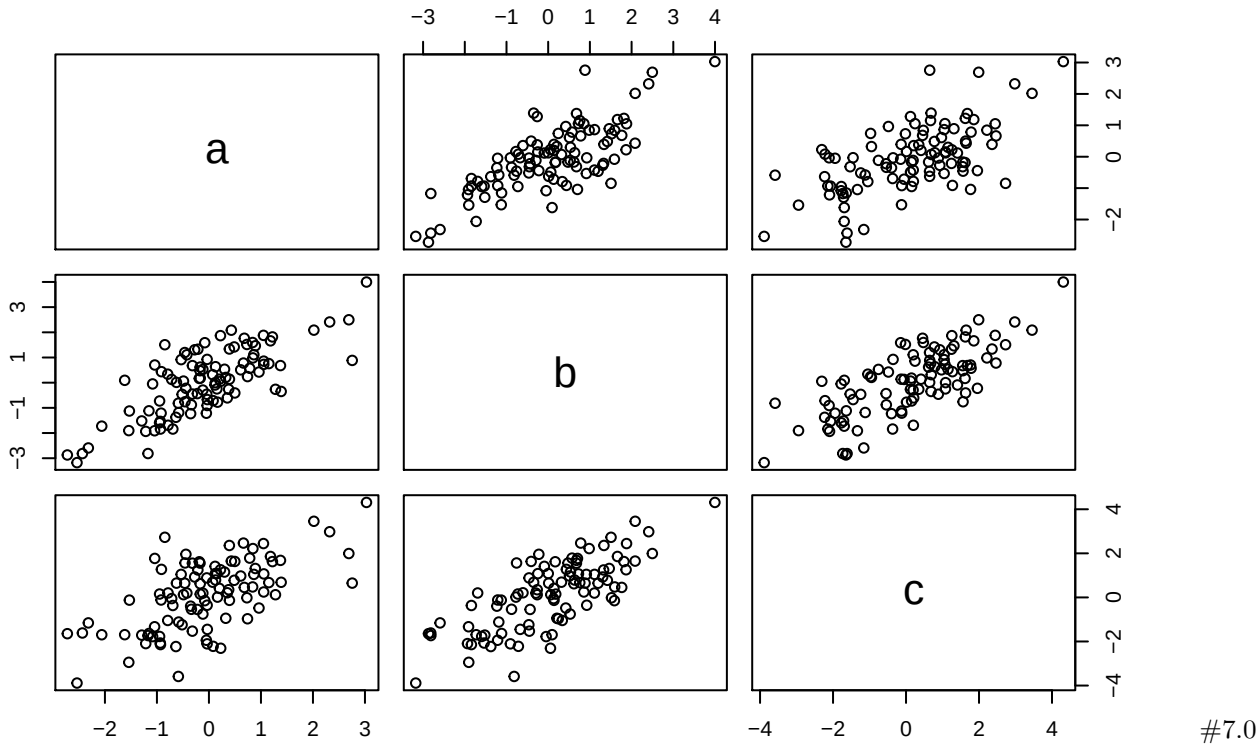

rnorm(100)
3
2
1
0
−1
−2
0
20
40
60
80
100
Index
rnorm(100)
2
1
0
−1
−2
0
20
40
60
80
100
Index



6.3 TODO

Make a script file which constructs three random normal vectors of length 100. Call these vectors x1,x2andx3. Make a data frame called t with three columns (called a,b and c) containing respectively x1,x1+x2 and x1+x2+x3. Call the following functions for this data frame: plot(t) and sd(t). Can you understand the results? Rerun this script a few times

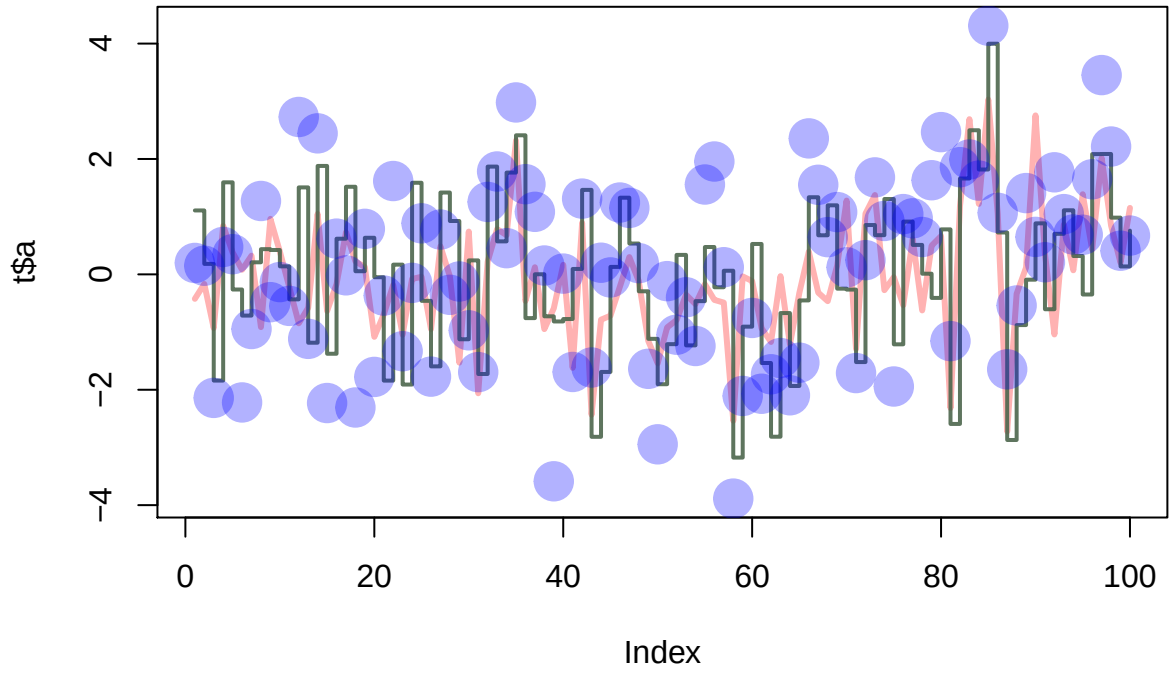
```
x1 =c(rnorm(100))
x2 = c(rnorm(100))
x3 = c(rnorm(100))
t = data.frame(a=x1,b=x1+x2,c=x1+x2+x3 )
plot(t)
```



#7.0

TODO Add these lines to the script file of the previous section. Try to find out, either by experimenting or by using the help, what the meaning is of rgb, the last argument of rgb,lwd,pch,cex.

```
plot(t$a, type="l", ylim=range(t),lwd=3, col=rgb(1,0,0,0.3))
lines(t$b, type="s", lwd=2,col=rgb(0.3,0.4,0.3,0.9))
points(t$c, pch=20, cex=4,col=rgb(0,0,1,0.3))
```



8.0 TODO

Make a file called tst1.txt in Notepad from the example in Figure 4 and store it in your working directory. Write a script to read it, to multiply the column called g by 5 and to store it as tst2.txt.

```
D8= read.table(file = "/home/juan/SRT411/SRT411-Assignment-0/tst1.txt", header =TRUE)
write.table(D8$g*5, file=  "/home/juan/SRT411/SRT411-Assignment-0/tst1.txt",row.names=FALSE)
D8
```

```
## [1] x
## <0 rows> (or 0-length row.names)
```

9.0 TODO

Compute the mean of the square root of a vector of 100 random numbers. What happens?

```
##V9=c(rnorm(100), na.rm=TRUE)
V9=c(runif(n=100, min=0, max=100))
V9
```

```
##   [1] 29.7240999 35.5504707 33.9618948 81.1689817 84.3810313 14.5772333
##   [7] 41.4798350 26.7579711 69.2988161 73.1610576 88.2345683 68.7017347
##  [13] 74.2688262 48.0564674 80.3710414 42.9354981 12.9451118 69.3951587
##  [19] 54.3338763 40.5345530 29.3783343 23.5193939 15.5641381 91.9721272
##  [25] 17.5401043 56.0871597 84.9617043 59.3745368 65.6886532 16.8622987
##  [31]  7.0554074  8.8706822 53.5715120 82.6064521 55.5044075 40.4301917
##  [37] 91.5749036 15.7397323 45.5269746 76.0300602 60.1108287 67.5792135
##  [43] 60.4653094  5.1643017 77.3247440 11.5395242 76.0543817 56.6137326
##  [49] 57.6422286 21.7274705 94.3788263 89.6202150 39.7743792 27.3484797
##  [55] 28.5393353 67.9897494 35.6399629 60.0268099 71.1267924 91.2610156
##  [61] 46.6117826 18.7052548 68.6199631 55.5409998 54.7246020 62.7698386
##  [67] 89.0955936  0.1098835 13.0126130 96.3080426 96.8334303 54.0441136
##  [73]  7.6343101 81.5725195 84.6050163 17.7414897 71.2700964 59.3069454
##  [79] 85.1777792 30.8949681 75.8757714 82.8951429 46.4599281 61.4337183
##  [85] 85.3616467 32.5461870 15.2952672 88.9542947 94.0426449 37.1750465
##  [91] 18.1641137 35.9296476 69.5646023 24.4858299 49.1439560  9.9097048
##  [97] 78.2395057 52.3674201  6.4614994 68.1862195
```

```
j=c(1,2,NA)
max(j)
```

```
## [1] NA
```

```
max(j,na.rm = TRUE)
```

```
## [1] 2
```

```
max(V9, na.rm=TRUE)
```

```
## [1] 96.83343
```

```
mean(sqrt(V9), na.rm = TRUE)
```

```
## [1] 6.902186
```

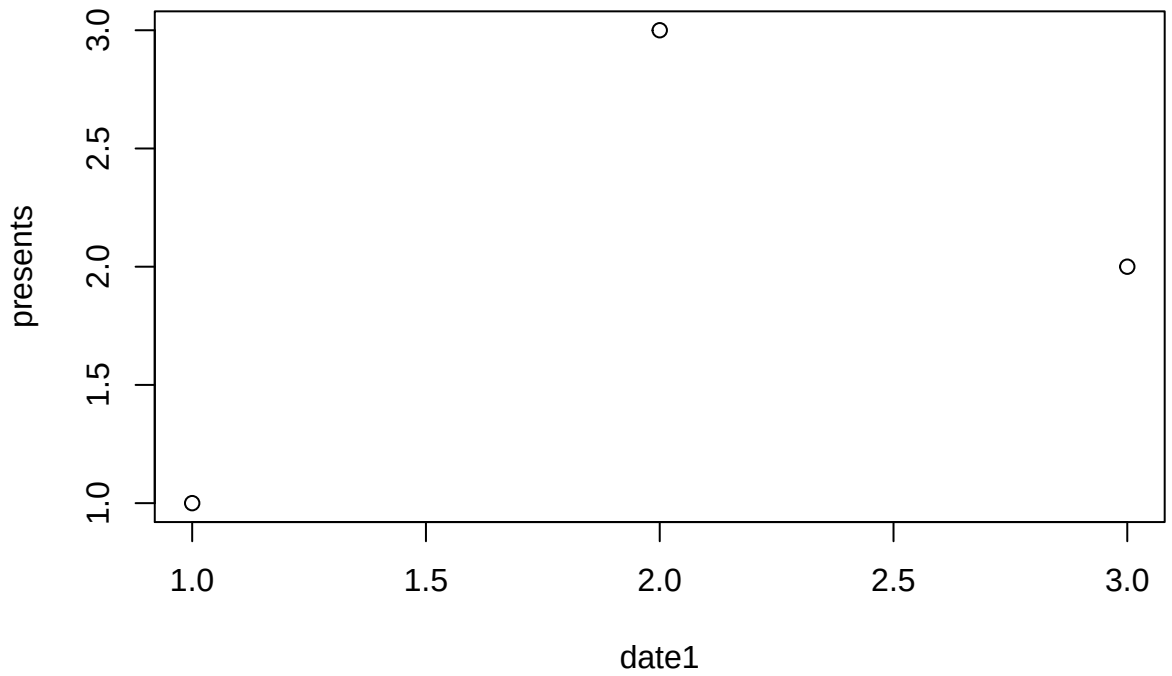
10.2 Dates

Make a graph with on the x-axis: today, Sinterklaas 2014 and your next birthday and on the y-axis the number of presents you expect on each of these days. Tip: make two vectors first

```
date1=strptime(c("20170201","20171225","20170216"),format = "%Y%m%d")

d<- data.frame(date1=c("20170201","20171225","20170216"),presents=c("2","3","4"))
##d<- data.frame(date1,presents=c("2","3","4"))
x<-d$date1
y<-d$prensents

plot(x,y,xlab="date1",ylab="presents")
```



#11.2

TODO Make a vector from 1 to 100. Make a for-loop which runs through the whole vector. Multiply the elements which are smaller than 5 and larger than 90 with 10 and the other elements with 0.1.

```
s=c()
for(i in 1:100)
 {if (i<5 | i >90)
   {s[i]=i * 10
   }else{
   s[i]=i*0.1
   }
}
s
```

```
##   [1]   10.0   20.0   30.0   40.0    0.5    0.6    0.7    0.8    0.9    1.0
##  [11]    1.1    1.2    1.3    1.4    1.5    1.6    1.7    1.8    1.9    2.0
##  [21]    2.1    2.2    2.3    2.4    2.5    2.6    2.7    2.8    2.9    3.0
##  [31]    3.1    3.2    3.3    3.4    3.5    3.6    3.7    3.8    3.9    4.0
##  [41]    4.1    4.2    4.3    4.4    4.5    4.6    4.7    4.8    4.9    5.0
##  [51]    5.1    5.2    5.3    5.4    5.5    5.6    5.7    5.8    5.9    6.0
##  [61]    6.1    6.2    6.3    6.4    6.5    6.6    6.7    6.8    6.9    7.0
```

```
##  [71]    7.1    7.2    7.3    7.4    7.5    7.6    7.7    7.8    7.9    8.0
##  [81]    8.1    8.2    8.3    8.4    8.5    8.6    8.7    8.8    8.9    9.0
##  [91]  910.0  920.0  930.0  940.0  950.0  960.0  970.0  980.0  990.0 1000.0
```

11.3 TODO

Write a function for the previous ToDo, so that you can feed it any vector you like (as argument).Use a for-loop in the function to do the computation with each element. Use the standard R function length in the specification of the counter.

```
fun1=function(arg1,arg2)
{
s=c()
for(i in arg1:arg2)
 {if (i<5 | i >90)
   {s[i]=i * 10
   }else{
   s[i]=i*0.1
   }
}
s
}
fun1(arg1=3,arg2=50)
```

```
##  [1]   NA   NA 30.0 40.0  0.5  0.6  0.7  0.8  0.9  1.0  1.1  1.2  1.3  1.4
## [15]  1.5  1.6  1.7  1.8  1.9  2.0  2.1  2.2  2.3  2.4  2.5  2.6  2.7  2.8
## [29]  2.9  3.0  3.1  3.2  3.3  3.4  3.5  3.6  3.7  3.8  3.9  4.0  4.1  4.2
## [43]  4.3  4.4  4.5  4.6  4.7  4.8  4.9  5.0
```